

*** Have out HW on your desk**

*** Warm up for today: Last page of notes packet
from yesterday #2 & 3**

$$2) \quad a) \quad P(A \overset{\text{and}}{\cap} B) \Rightarrow P(B|A) = \frac{P(A \cap B)}{P(A)}$$

$$0.2 = \frac{P(A \cap B)}{0.6}$$

$$\boxed{0.12 = P(A \cap B)}$$

$$b) \quad P(A \overset{\text{or}}{\cup} B) = P(A) + P(B) - P(A \cap B)$$

$$= 0.6 + 0.34 - 0.12$$

$$\boxed{= 0.82}$$

$$\textcircled{3} \text{ a) } A \cap B = \{6, 12\}$$

$$\text{b) } P(A \cap B) = \frac{2}{20} = \textcircled{\frac{1}{10}}$$

$$\text{c) } D^c = \{0, 2, 3, 5, 6, 9, 11, 12, 13, 15, 17, 19\}$$

$$\text{d) } P(C \cap B) = \textcircled{\frac{3}{20}}$$

$$\text{e) } P(A \cup B) = \frac{10}{20} = \textcircled{\frac{1}{2}}$$

$$\text{f) } P(C \cap D) = \frac{2}{20} = \textcircled{\frac{1}{10}}$$

$$\text{g) } P(C^c) = 1 - P(C) = 1 - \frac{10}{20} = \frac{10}{20} = \textcircled{\frac{1}{2}}$$

$$\text{h) } C \cup A = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 17, 19\}$$

$$\textcircled{1} \text{ a) } P(S_m) = \frac{480}{1200} = \textcircled{0.40}$$

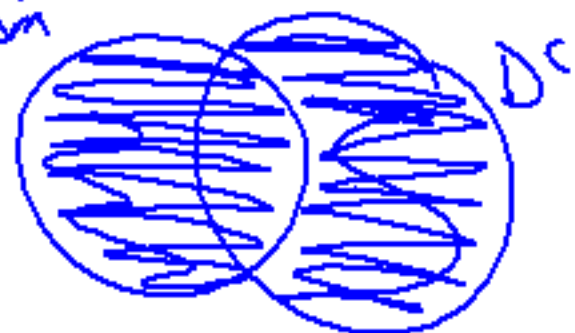
$$\text{b) } P(S_m | D) = \frac{315}{900} = \textcircled{0.35}$$

$$\text{c) } P(D \cap S_m) = \frac{315}{1200} = \textcircled{0.2625}$$

$$\text{d) } P(S_m \cup D^c) = \frac{315 + 165 + 135}{1200} = \textcircled{0.5125}$$

Union

S_m



$$\textcircled{2} \text{ a) } P(N) = \frac{1800}{2000} = \textcircled{0.9}$$

$$\text{b) } P(H|L) = \frac{10}{100} = \textcircled{0.1}$$

$$\text{c) } P(N \cup R) = \frac{1710 + 90 + 190}{1200} = \textcircled{0.995}$$

$$\textcircled{3} \text{ a) } P(<35) = \frac{42968}{151616} = \textcircled{0.283}$$

$$\text{b) } P(c) = \frac{30781}{151616} = \textcircled{0.203}$$

$$\text{c) } P(<35 \cap c) = \frac{10174}{151616} = \textcircled{0.067}$$

$$\text{d) } P(c | <35) = \frac{10174}{42968} = \textcircled{0.237}$$

$$\text{e) } P(<35 \cup c) = \frac{32794 + 10174 + 20607}{151616} = \textcircled{0.419}$$

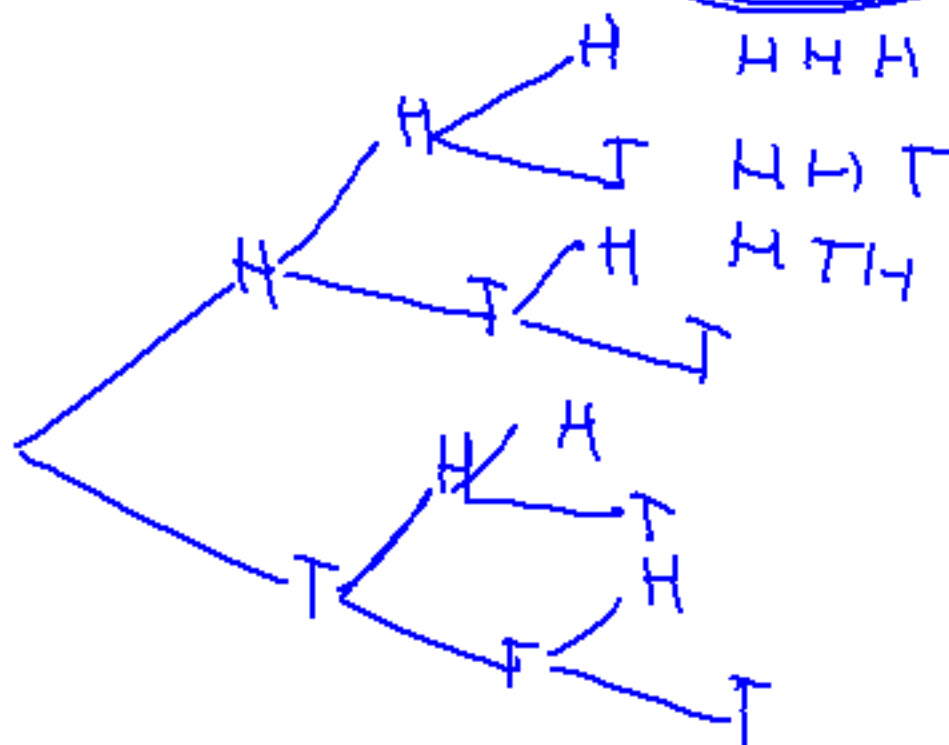
4.5

$A = 1^{\text{st}}$ event

$B = 2^{\text{nd}}$ event

\downarrow

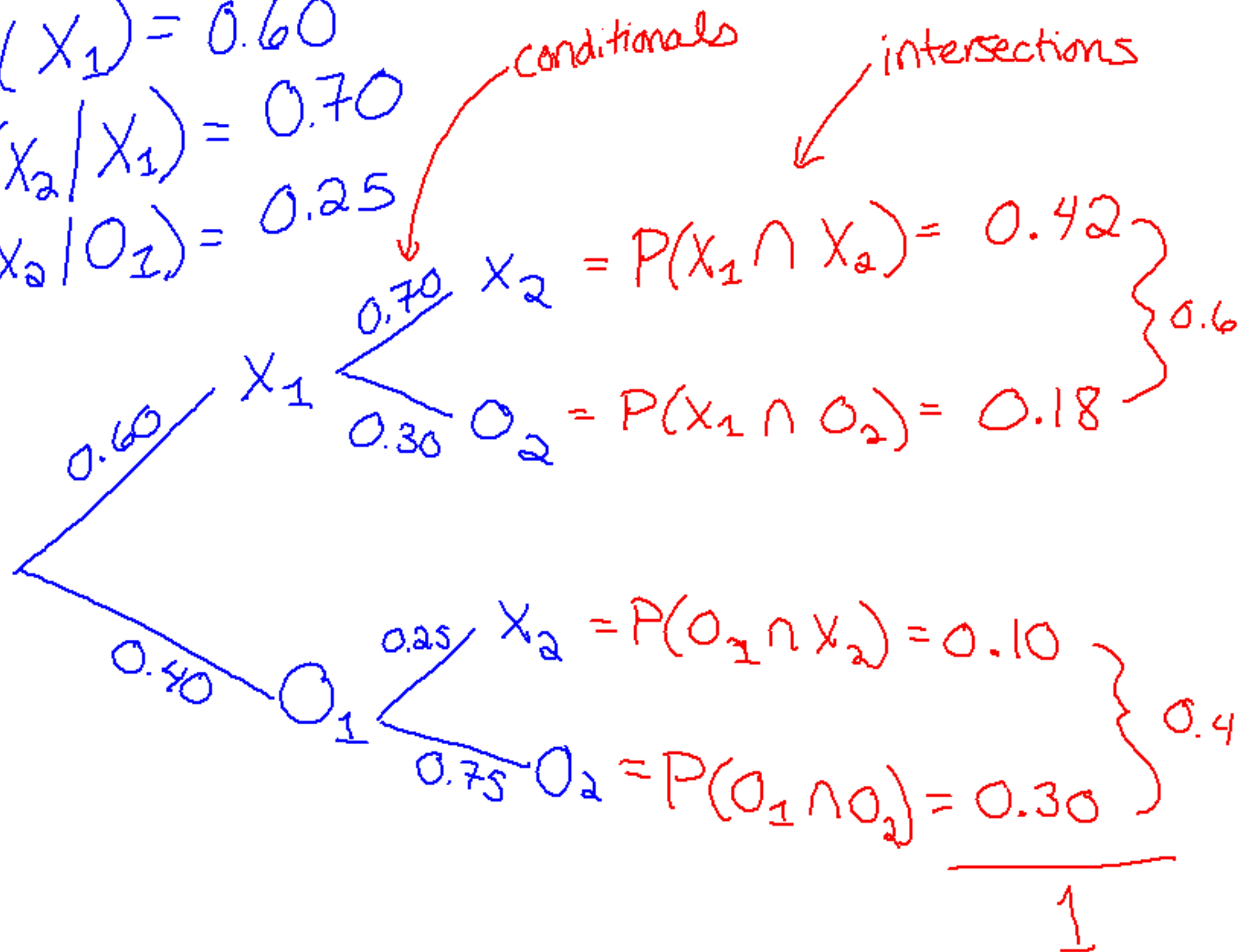
$$P(B|A) \neq P(A|B)$$



$$P(X_1) = 0.60$$

$$P(X_2|X_1) = 0.70$$

$$P(X_2|O_1) = 0.25$$



$$1) P(X_1) = 0.40$$

$$2) P(X_1 \cap X_2) = 0.42$$

$$3) P(X_2 | O_1) = 0.25$$

$$4) P(O_2 | X_1) = 0.30$$

$$5) P(X_2) = P(X_1 \cap X_2) + P(O_1 \cap X_2) = 0.42 + 0.10 = 0.52$$

$$6) P(O_2) = P(X_1 \cap O_2) + P(O_1 \cap O_2) = 0.30 + 0.18 = 0.48$$

$$7) P(X_1 | X_2) = \frac{P(X_1 \cap X_2)}{P(X_2)} = \frac{0.42}{0.52} = 0.808$$

$$8) P(O_1 | X_2) = \frac{0.1}{0.52} = 0.192$$

EXAMPLE - TEXTBOOKS!

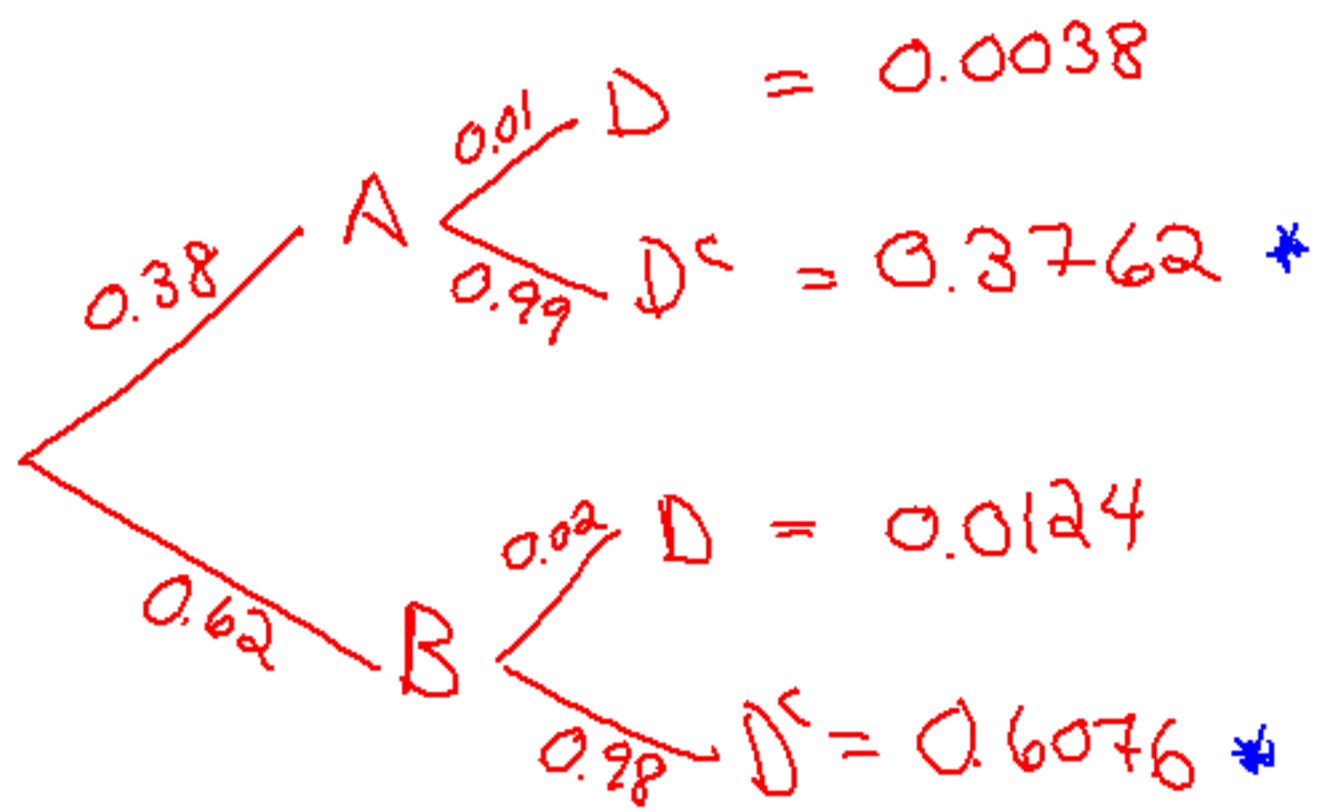
#2

$$P(A) = 0.38$$

$$P(B) = 0.62$$

$$P(D|A) = 0.01$$

$$P(D|B) = 0.02$$



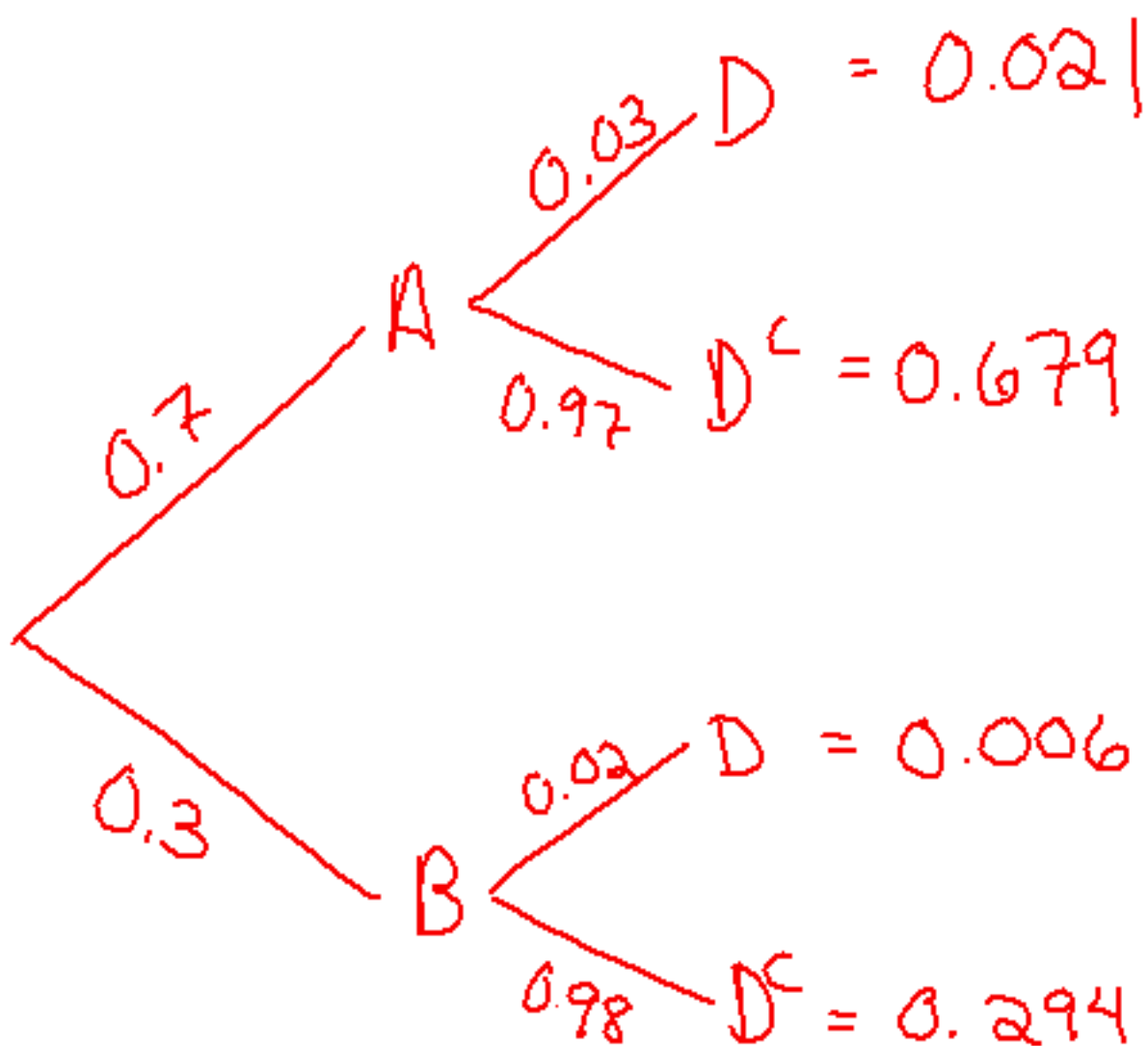
$$\textcircled{1} P(D^c) = 0.3762 + 0.6076$$
$$= 0.9838$$

$$\textcircled{2} P(B|D^c) = \frac{0.6076}{0.9838}$$
$$= 0.6176$$

$$\textcircled{3} \quad P(A | D) = \frac{P(A \cap D)}{P(D)} = \frac{0.0038}{0.0162} = \boxed{0.2346}$$

$$P(B | D) = \frac{0.0124}{0.0162} = \boxed{0.7654}$$

①

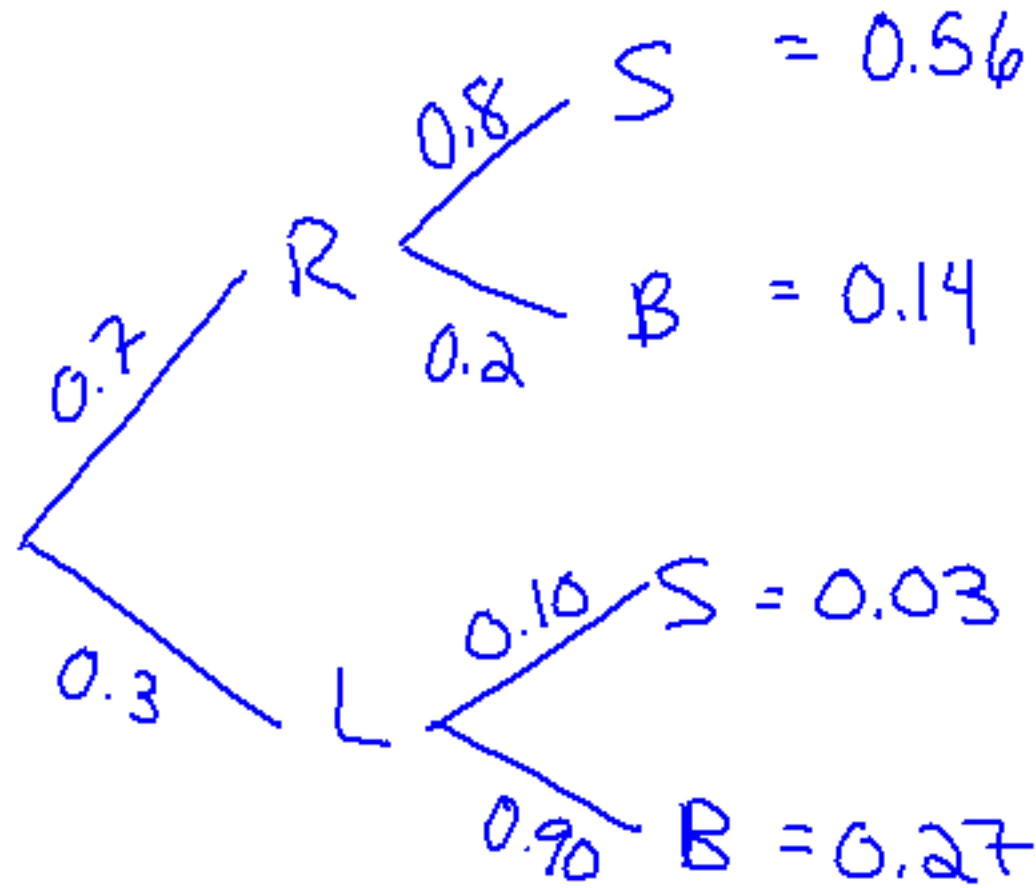


$$a) P(D) = 0.027$$

$$b) P(A|D) = \frac{0.021}{0.027} = 0.778$$

$$P(B|D) = \frac{0.006}{0.027} = 0.222$$

②



$$P(L|B) = \frac{0.27}{(0.14 + 0.27)}$$

$$= 0.659$$

$$P(R) =$$

$$P(L) =$$

$$P(B|R) =$$